

WHAT IS CLAIMED IS:

1. A method for indexing a plurality of images in a database, each image in said database having within it an object of the same type, comprising the steps of:
digitizing each of said plurality of images in said database into an array of descriptors;
separating said descriptors into a plurality of index groups;
calculating for at least one of said plurality of images in said database an index value corresponding to one of said index groups.
2. A method for indexing a plurality of images in a database according to claim 1 further comprising the step of identifying a group of images in said database having an index value corresponding to a particular index group greater than a threshold value.
3. A method for indexing a plurality of images in a database according to claim 1 wherein said index value is a function of at least two of said descriptors.
4. A method for indexing a plurality of images in a database according to claim 3 wherein said function comprises averaging at least two of said descriptors.
5. A method for indexing a plurality of images in a database according to claim 3 wherein said function comprises averaging four of said descriptors.
6. A method in accordance with claim 1, wherein said object type comprises a human face.
7. A method of comparing a target image to a database of a plurality of digitized images comprising the steps of:
digitizing a target object in said target image into an array of descriptors;
calculating an average of at least a first descriptor and a second descriptor from said target object; and
comparing said calculated average to a threshold value.
8. A method for image indexing comprising:
digitizing a target image having an object within it into an array of descriptors;
digitizing at least one source image in a database into an array of descriptors,
each said source image having an object within it and said object in said first image and said object in said at least one source image being of same type;

wherein said array of descriptors from said first image and said array of descriptors from said at least one source image comprise the same type and the same number of descriptors; and

separating said descriptors into index groups, wherein said index groups each have an index value.

9. A method for image indexing comprising:
providing a first image, said first image having an object;
providing an image database having at least one source image, said at least one source image in said image database having an object;

wherein said object in said first image and said object in said at least one source image in said image database being of same type;

digitizing said first image into an array of descriptors;

digitizing said at least one source image into an array of descriptors;

wherein said array of descriptors from said first image and said array of descriptors from said at least one source image comprise the same type and the same number of descriptors, and wherein a descriptor corresponds to one feature in said object; and

separating said descriptors into index groups, wherein said index groups each have an index value.

10. A method in accordance with claim 9, wherein said object type comprises a human face.

11. A method according to claim 9, wherein said index value is the average value of said descriptors in said index group.

12. A method according to claim 9, wherein said index group comprises a consecutive number Y of said descriptors.

13. A method according to claim 12, further comprising selecting Y.

14. A method according to claim 9, wherein said index group comprises every other Z descriptors, wherein Z is an integer.

15. A method according to claim 14, further comprising selecting Z.

16. A method of image indexing comprising:

providing a first index level, a second index level, and a pre-set number;

providing a image database having a source image;

wherein said first index level has an index value, said second index level has an index value, said first index level having a list of buckets, said second index level having a list of buckets, and said buckets each having a counter;

if said counter of said bucket in said first index level is larger than said pre-set number, then said bucket in said first index level has a second index level, and said counter is the sum of counters of said buckets in said second index level;

if said counter of said bucket in said first index level is less than or equal to said pre-set number, then said bucket in said first index level has a list of image templates, and the number of said image templates is said counter;

wherein said image template comprising said digitized descriptors of said source image according to claim 1.

17. A method according to claim 16, wherein said first index level comprises a hash table, and comprising using said index value as a hash value.

18. A method according to claim 16, wherein said second index level comprises a hash table, and comprising using said index value as a hash value.

19. A method of finding top matches from an image database having source images, given a target image, and using image indexing architecture with a one-by-one matching algorithm, a pre-set number as an upper limit of a final fine group, and a pre-set percentage threshold for similarity matching for said matching algorithm, said finding process comprising:

providing an image indexing architecture according to claim 8;
digitizing said target image into an image template of an array of descriptors;
calculating index groups of said target image;
use said first index of said target image to index into said first index level of
said image indexing architecture;

if the counter of said first index of said first index level is larger than or equal
to the said pre-set number, then using said second index of said target image to index
into said second index level of said image indexing architecture;

if the counter of said first index of said first index level is less than the said
pre-set number, then picking neighboring buckets of said first index in said first index
level until the sum of the counters of said neighbor buckets of said first index is larger
than or equal to the said pre-set number;

picking the image templates from said neighbor buckets of said first index as
final one-by-one matching group;

thereafter applying said one-by-one matching algorithm to said target image
and each of said source images of said picked final one-by-one matching group.

20. A method according to claim 19, wherein said matching algorithm provides a
list of matches with higher than said pre-set percentage threshold, or gives no match if there
are no matches with higher than said pre-set percentage threshold.